GPE *Vendors*

DBX25/E “Espresso”
DBX30/E “Espresso”

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technical handbook of DB8B logic board

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Main features of DB8B logic board

DB8B logic board is located inside the machine, in an easily reachable position. On this logic board there are all the electronic parts of the machine, except the cable's logic board named CAB2A (cables of the electric supply) and the "Espresso" group interface board named CAB3.

The main features of the DB8B logic board are:

- Dispensing of 24 products, with totally programmable recipes and all different prices
- 3 powder groups (one with 2 powders), sugar group and "Espresso" group
- Possibility of 6 more products to be programmed (hot water, chilled water, cups,...)
- Optional of "pre-infusion" and coffee "quick production"

- Automatic washing at programmable time and manual washing during service
- Manual test on single parts of machine and test on every I/O through keyboard and display
- Alarms by visible and acoustic signals and separated totalizers for each code

- Direct connection to parallel coin mechanisms (6 coin channels) both 10 and 16 poles
- Connection to banknotes validator (4 channels) with 12V/3A stabilized supply on board
- Serial interface for connecting Executive payment systems
- Partial totalizers (number of single coins, Executive) and total amount gained

- LCD alphanumeric display 1 x 16 characters in every language (max 32) on the same memory
- 9 keys (=selection buttons) keyboards + internal key for functions of managing and testing
- Thermo-regulation of 3 temperatures and reading of ambient temperature for compensation

Description of sale's functions

Sales' operations are very simple and evident thanks to all information given to the user by the alphanumerical display and by the clearness of the keyboard.

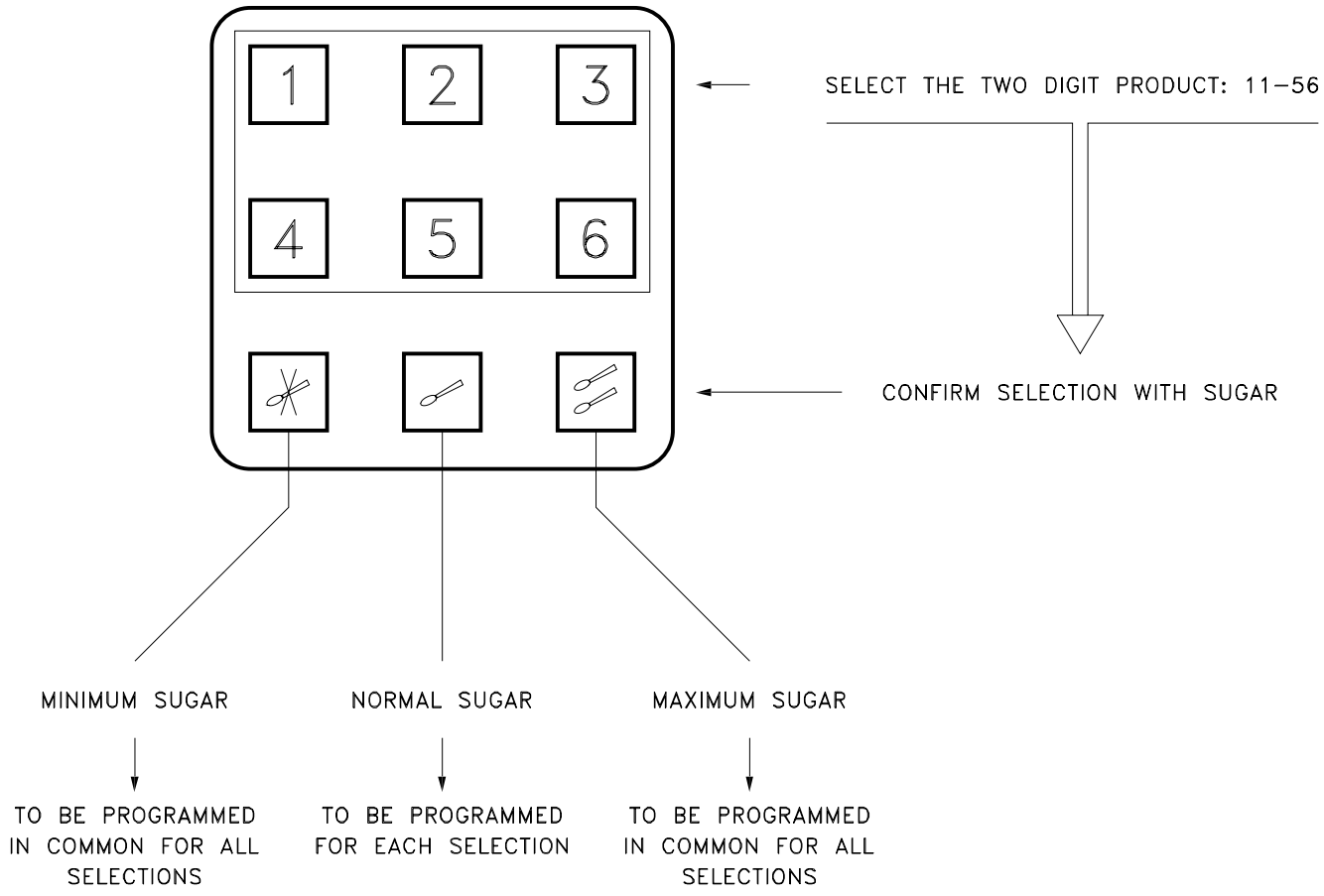
The machine can dispense up to 24 products, made using different recipes. These depend on the combination of water and powder from the 3 groups (one with 2 powders), and of the "Espresso" and sugar quantity. Moreover, there are 6 more products (hot water, chilled water, cups,...) of which only the quantity can be programmed.

The user can choose among many pre-defined recipes in the machine. Nevertheless the user can choose whether to modify the quantity of sugar by pressing one of the 3 keys of the keyboard representing 0,1,2 spoons:

• By pressing the central key (1 spoon) the product will have a normal quantity of sugar

• By pressing the key on the left (no spoon) the product will not have any sugar

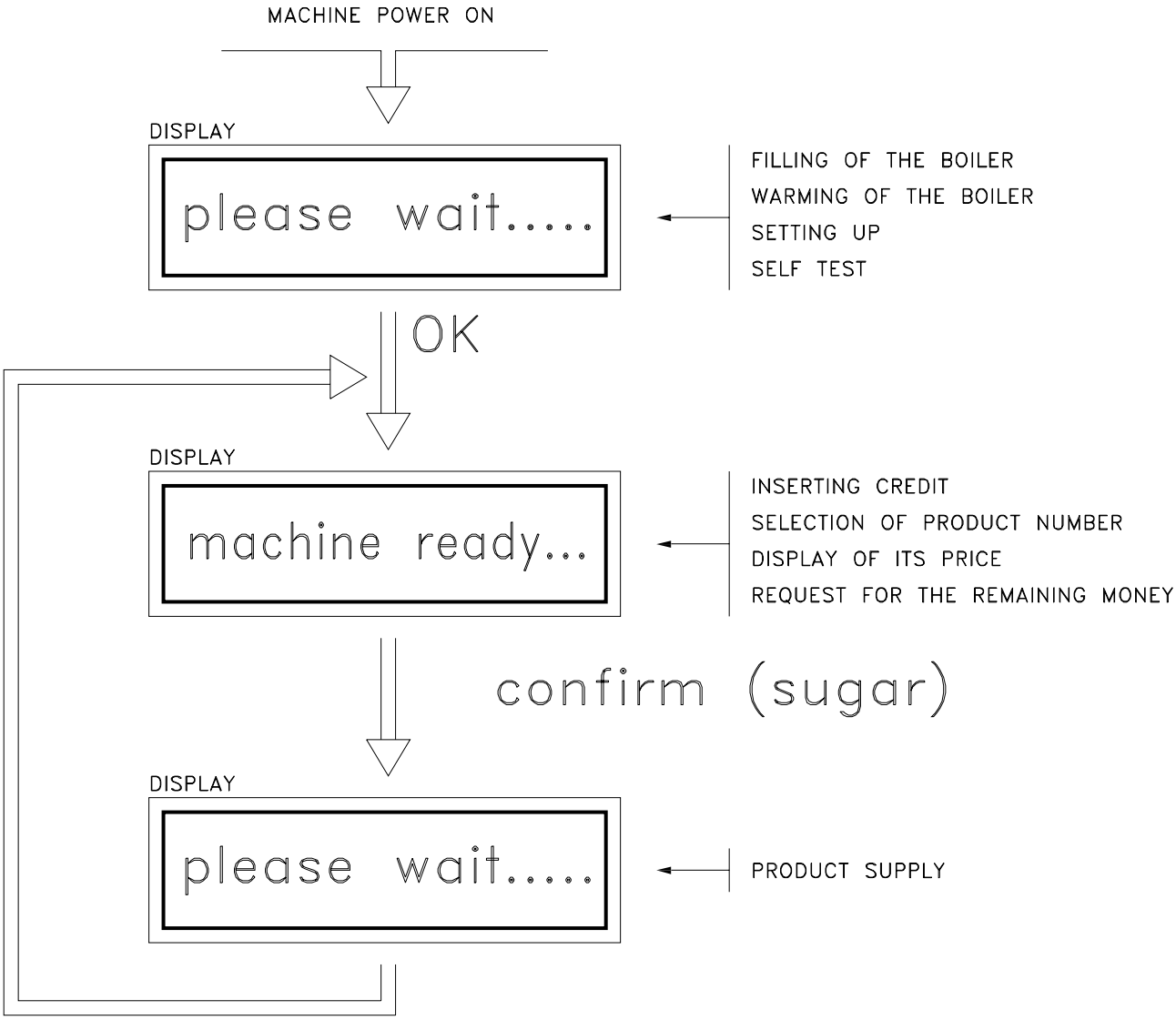
• By pressing the key on the right (2 spoons) the product will have more sugar



The user can insert credit in any phase of work of the machine, but selection can only be made in the stand-by phase (not during the programming, warming and supplying of the product).

By pressing the two numbers corresponding to the product, the price of same will be displayed and, eventually, the remaining money. Only when the right amount of money is reached, you are asked to confirm, by pressing one of the 3 sugar keys.

After the product is supplied, if there are residual credits on the machine they remain inside the machine unless there has been programmed the function of setting to zero the remaining credit within a max. time (menu: system configuration).

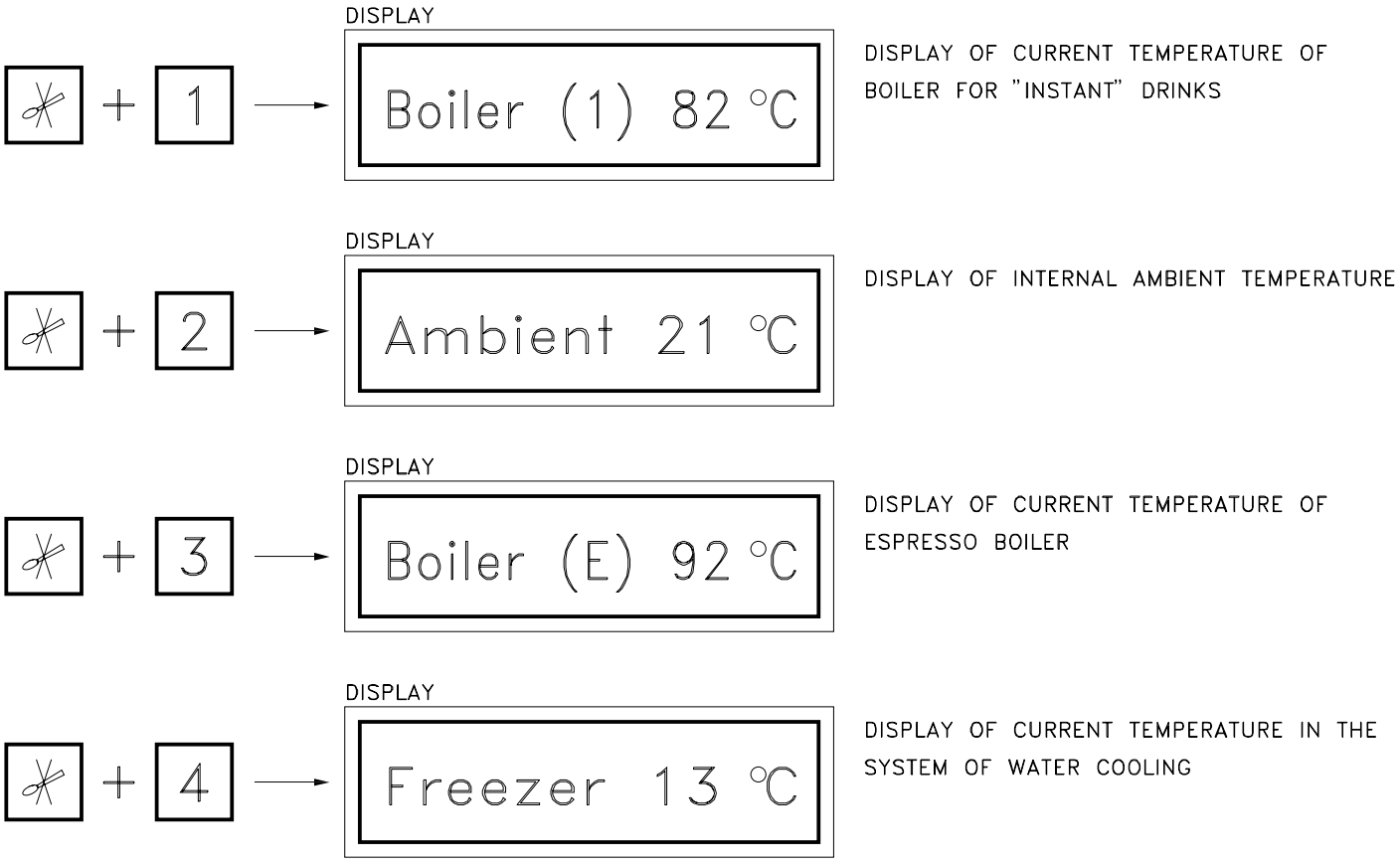


Display of current temperatures

DB8B logic board has 4 sensors of temperature, three of which are used for the thermo-regulations of those parts of the machine that are necessary to the production; the other one is used to detect the temperature inside the machine. This last sensor allows to speed up the pre-warming operations of the machine, especially at low temperature of the machine (as example, at the beginning of the day of work).

The boards control the warming of the boiler for instant drinks and the warming of the boiler for espresso coffee.

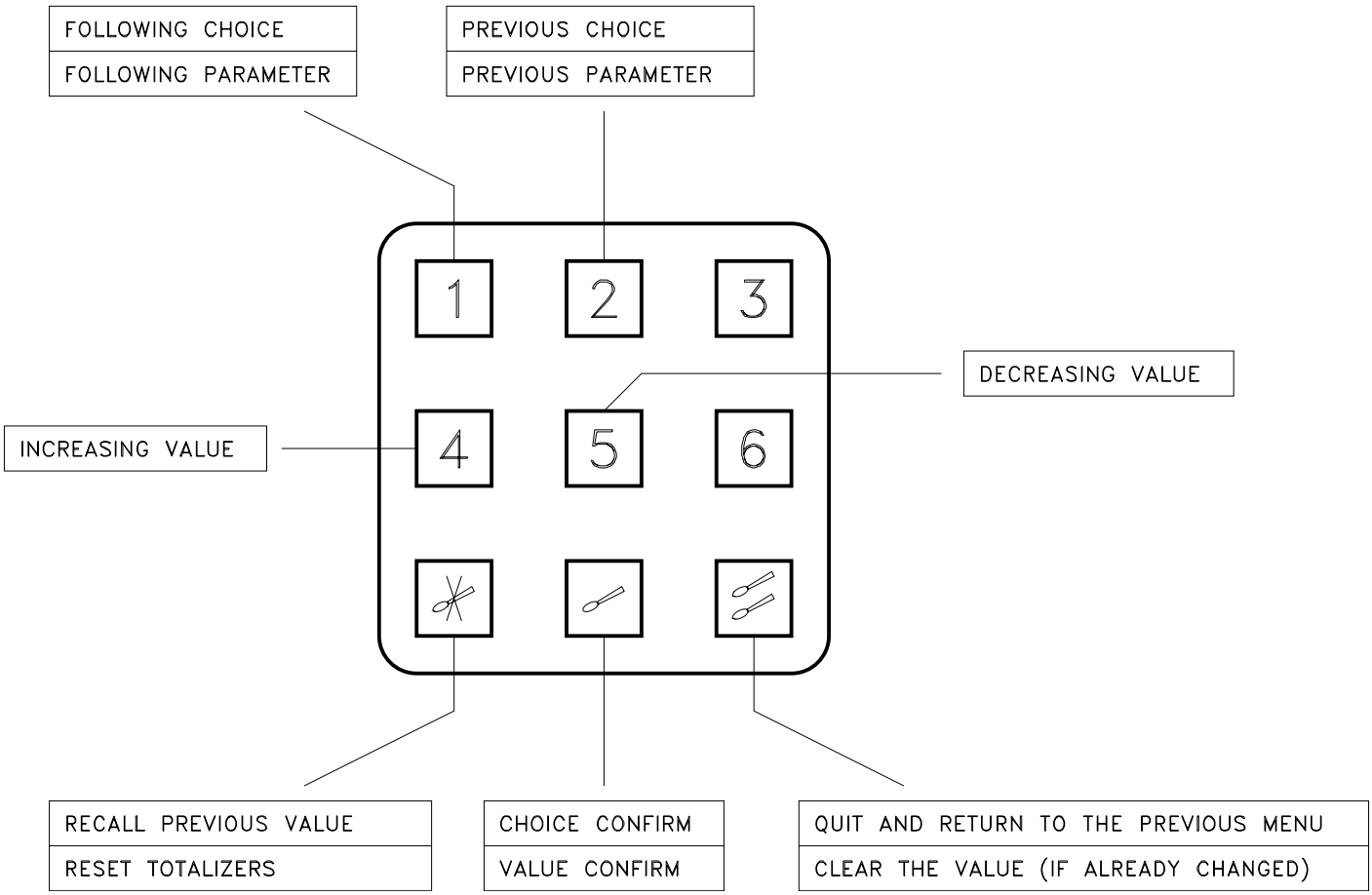
To verify temperature inside the machine during the pre-warming or the stand-by phase, press the key “no spoon” and an identifying key of the sensor, as explained in the following scheme:



Service and programming of the machine

DB8B logic board has many service functions and the possibility of programming the parameters of work. All these are inside the menu, following a logical order.

At first it is important to understand the alternative use of the keyboard (not the use of selecting products).
The keyboard is essential to move inside the service menu; to set up or modify every parameter and to test each part of the machine.
The meaning of the different keys on service is as follows:



• Key 1 and key 2 allow to select a voice or a parameter inside the menu;

• Key 4 and key 5 allow to modify the parameters' value;

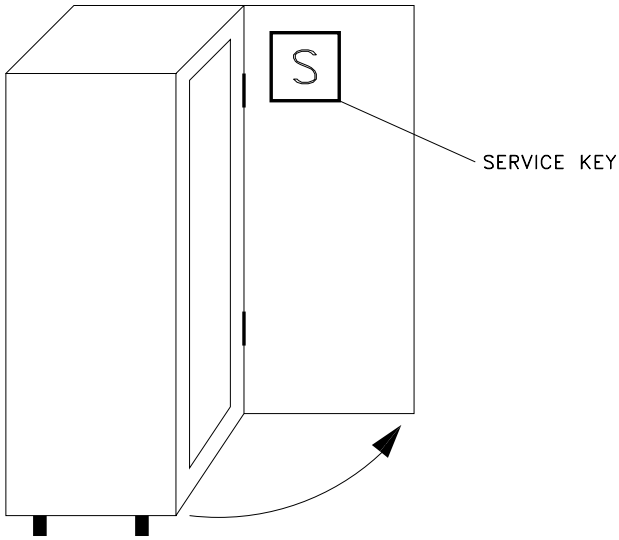
• Key "one spoon" is to confirm the voice of the menu;

• Key "no spoon" is for specific functions of the menu;

• Key "two spoons" is for the clearing and cancellation of the operation.

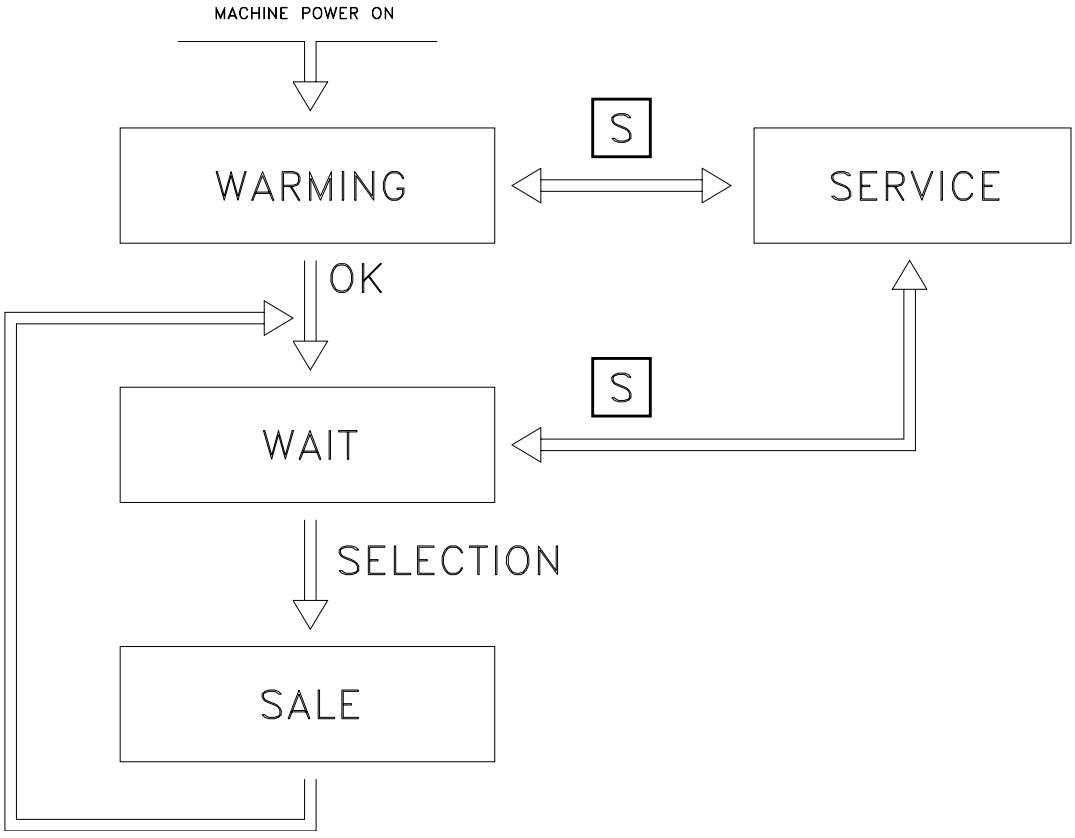
For a fast increase/decrease of some parameters hold the key at least 1 second.

For all service operations it is necessary a further selection button, called “service key”, which is on the back side of the keyboard. That’s why this kind of operation can be made only when the machine is open.



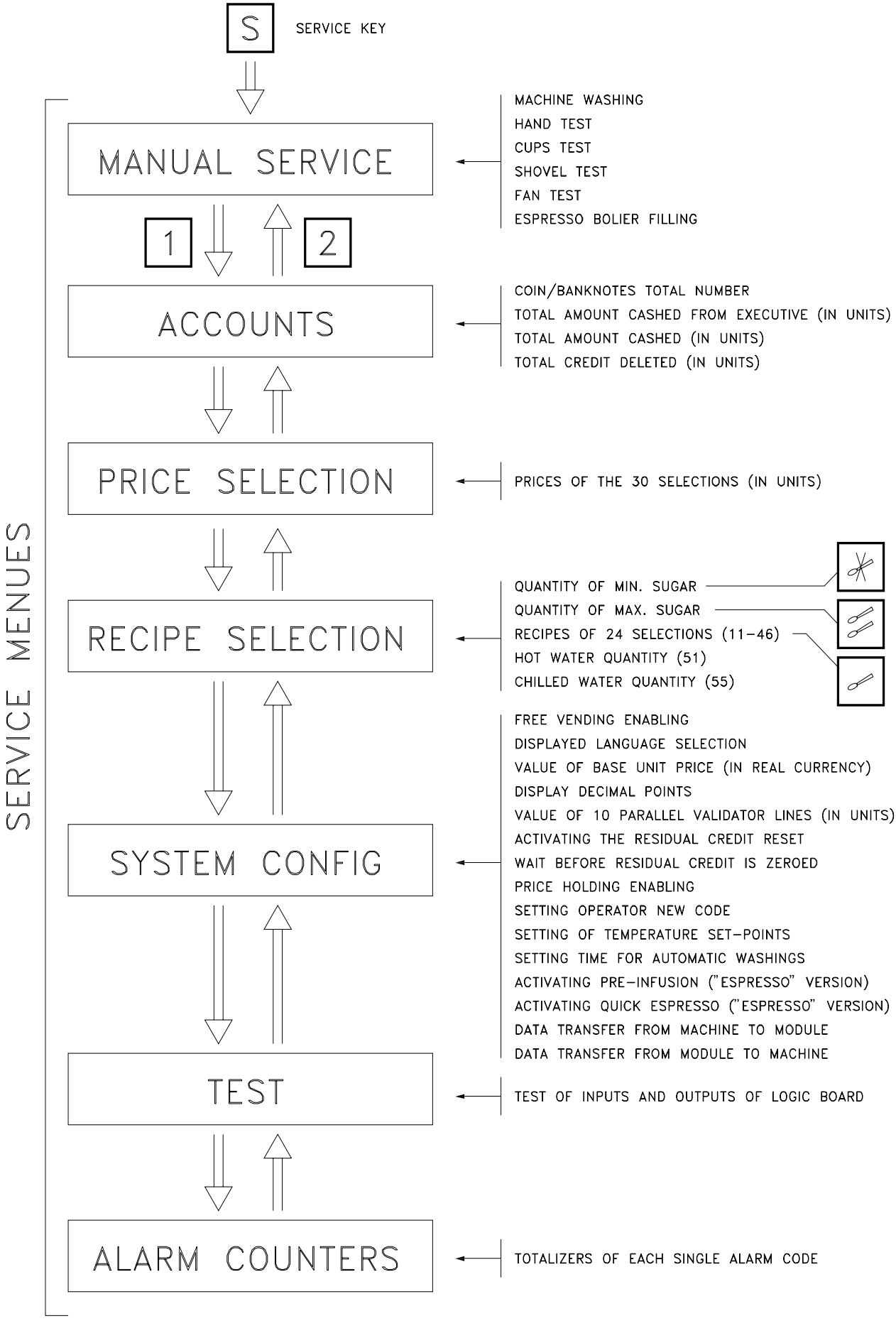
To enter some of the service menus, you have to dial a password, when required.
In case the machine has never been used before the default password is “0”; therefore, when password is asked, in this case you have only to press the key “one spoon”=confirm.
It is possible to change the value of the password (0-9999) through the service menu called “System configuration”. Once the password has been provided, this will not been asked for anymore until the switching off of the machine.

By pressing the service key, you can enter the service anytime, but during a sale.
In this way the several service menus will be displayed.
To exit the menus and the sub-menus it is necessary to press the service key or to switch off the machine. By exiting the service menus it is possible that the machine initiates some operations such as warming or setting up, since these depend on the manual managing of the machine parts.



Description of the service menu

Here is the table representing how the service and test operations, price and recipes programming and the totalizers and the alarms appear in the menu:

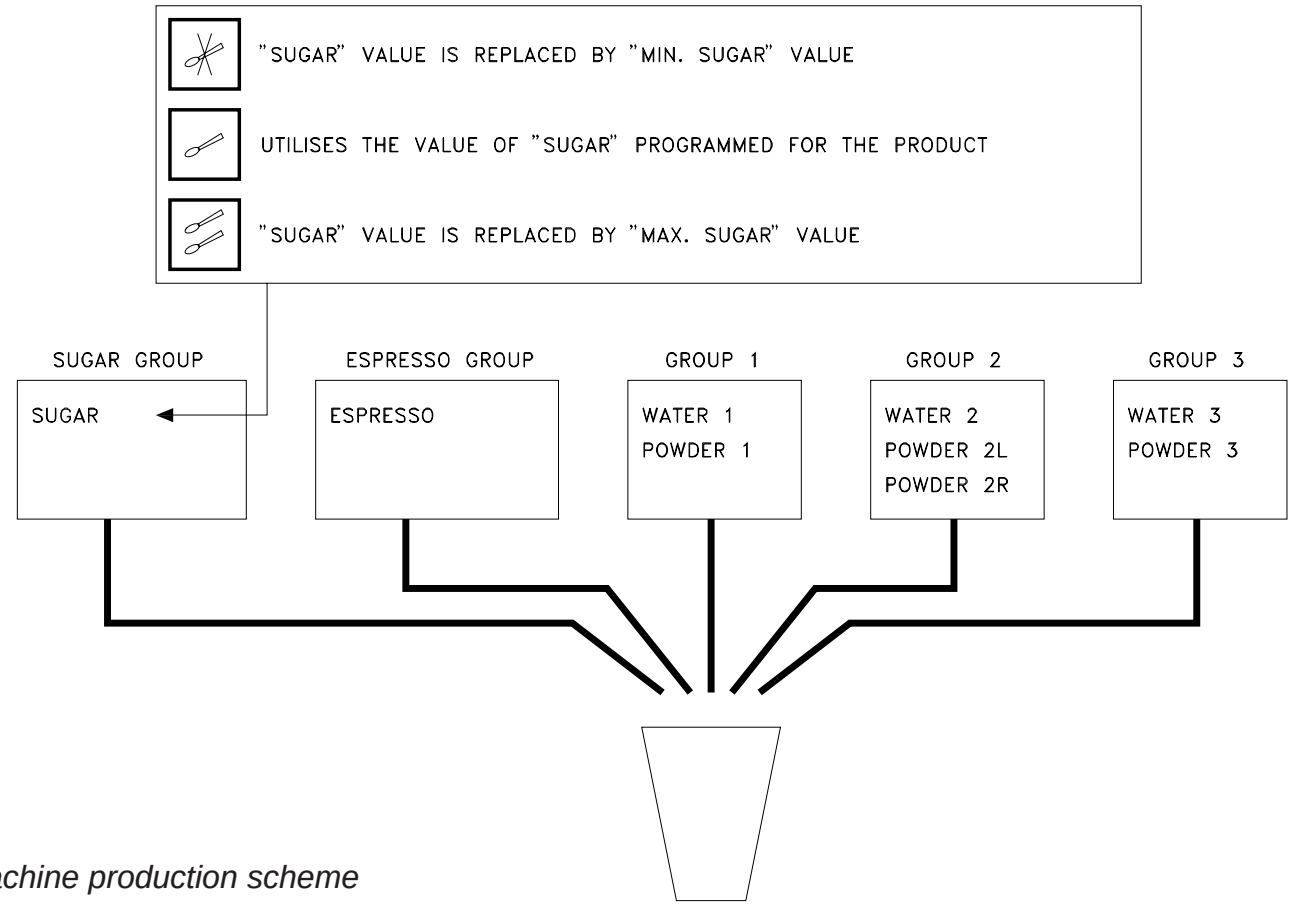


“MANUAL SERVICE” menu allows to proceed to the manual washing of machine, the test of some parts of the machine and the refilling of the Espresso boiler. To start these functions, at first enter the selected menu and press key “one spoon” (that has the start function). Only the filling of the “Espresso” boiler needs a continuous pressing of the key.

The “ACCOUNTS” menu has in itself all the counters of the machine, that work for the inserting of credits. To be more precise, there are 10 counters (one for each channel) that sum up the number of pieces of each coin and banknote accepted by the parallel validators; while the counter of the Executive payment systems and the total amount cashed by the machine are expressed under the base unit value programmed.
To set to zero all these counters you need to press key “no spoon” and to confirm this by pressing key “one spoon”; if you press key “two spoons” you’ll cancel the data before confirming them.
It is possible to display two different totalizers (that cannot be set to zero): one is for the total amount gained by the machine and the other is for the total amount of products supplied. To display them you have to press at the same time the keys “3” and “4” for the amount cashed or the keys “3” and “5” for the products supplied.

“PRICE SELECTION” menu is to set the price for the sale of products (for a max. of 30 selections).
Price must be programmed under the form of “base unit price”. The system can program a base unit price from 1 to 1000 and the value of price has a range from 0 to 5000.
If one product’s price is programmed with value 0 this means that no sale can be made of that product. If the user selects that product, on the display it will appear “nonexistent...”.

“RECIPE SELECTION” menu can change the recipes on all 24 programmable selections (11-46) and the quantities of the special selections (51-56).
The machine uses for the production 3 powder groups (one of these group is double). Then there are the Espresso group and the group for sugar. Here the scheme representing the production:



Machine production scheme

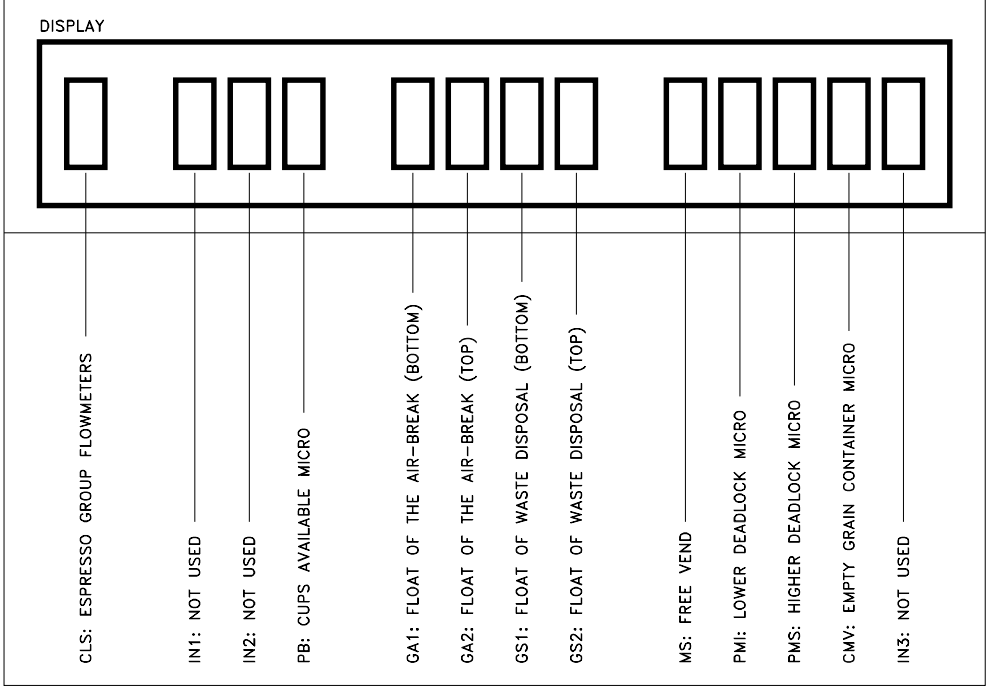
The selection recipes are made by combining different quantities of the various products inside the groups.
All quantities are expressed in seconds (with decimals) of the supply of ingredients, but the Espresso group. This one doesn't use time but the number of pulses of the float-meter.
The first values to be programmed are those of the sugar: sugar minimum and sugar maximum are common for all recipes, while normal sugar is to be programmed in each single recipe.
Then there are the 24 programmable recipes. Each recipe is made of 9 programmable values.
Any recipe of each selection corresponds to a number (that appears on the left in the display) and to see the other recipes it is necessary to press one of the two keys for the selection of parameters (the following = key1; the previous = key2).
The 5 way of speed allows positioning on the values of a particular recipe notwithstanding the 216 (9x24) programmed values.

The machine is normally provided with the EEprom memory already programmed with the most common and used recipes. These recipes can be changed by the operator.
Please, remember that the set up of the default values allows to recharge only the value of the recipes, keeping all the other parameters of work unchanged.

"SYSTEM CONFIGURATION" menu has all the general settings of the machine.
Payment systems: it is possible to set up the free sale, to choose the language for the messages of the display, to change the value of the base price unit (expressed in real currency), the number of the decimals, the value corresponding to the 10 channels of parallel validators, to set to zero the residual credit after a sale, the time before the credit will be cancelled and the "price holding" enabling. The price holding option allows to send a "number of price" to the executive changer rather than the same price. The number of sent price is equal to the first digit of the selection (for example: product "23" send the number price 2).
Then there is the set up of the operator's code (different from default 0), the set up of the set-point of the 3 thermo-regulations, the time (expressed in minutes) when in absence of selling the automatic washing of the groups initiates, finally the "pre-infusion" set up and the quick production of coffee (coffee is ground during the supply of same and not before).
Finally two commands can be used for reading and writing all data of the EEprom memory in the external module.

"TEST" menu allows to display the status of the 13 inputs ON/OFF of the machine, the values of the 4 inputs of the sensors of temperature and to start up the status of the 32 outputs.
To display the 4 temperatures it is necessary to press keys from 1 to 4.
The outputs can be activated only once. Therefore press key "no spoon" to see on the display the output properly selected and for moving use key 1 and 2; once you have chosen the proper output, you'll have to confirm by pressing key "one spoon".
In the following tables there are the associations between the inputs and the outputs and the different sensors of the machine:

ON/OFF INPUTS



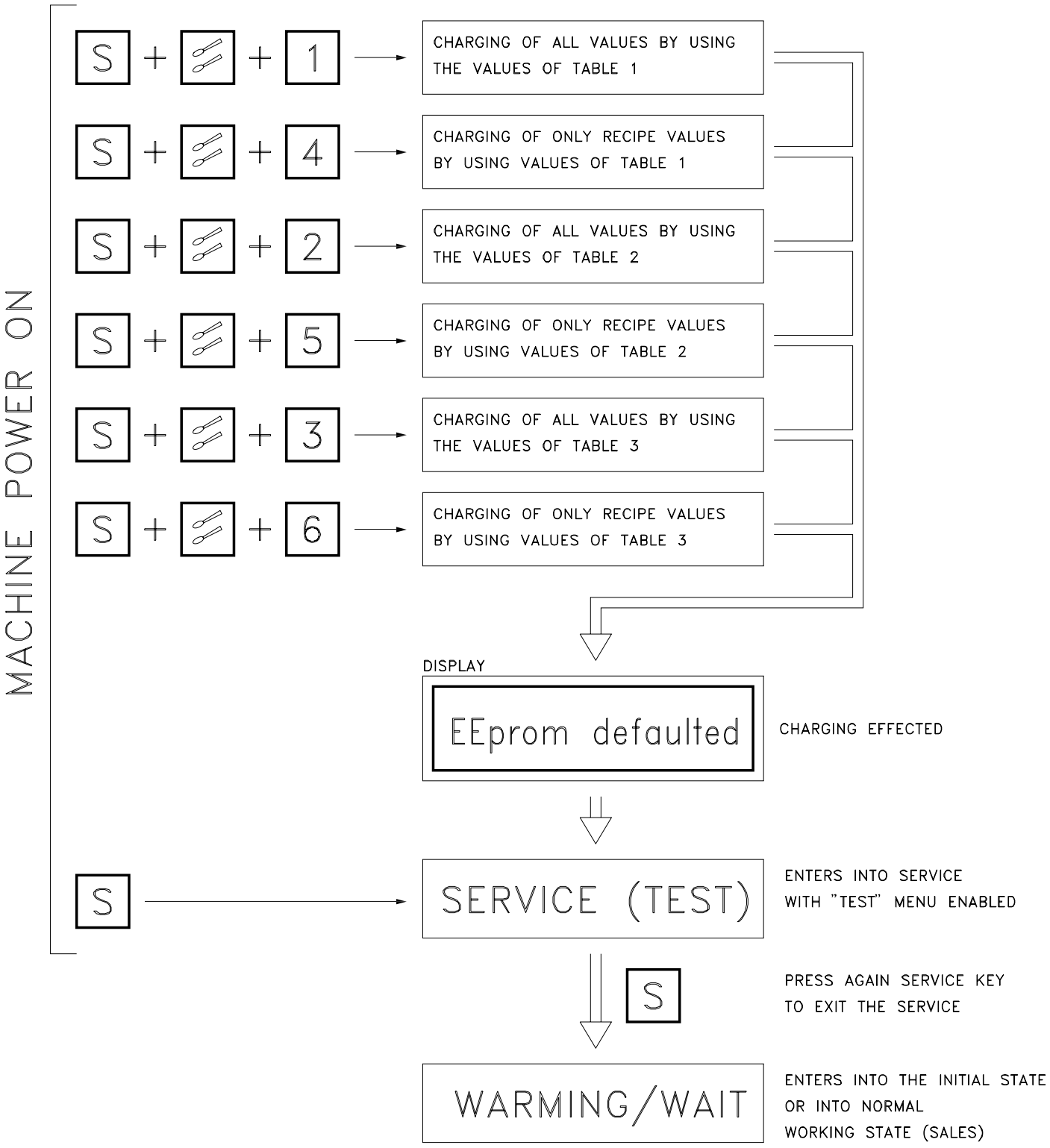
NUM	ON/OFF OUTPUTS
1	AP: 12V/5A POWER SUPPLY ACTIVATING
2	RC1: SOLUBLES BOILER RESISTANCE
3	MA: ASPIRATOR'S MOTOR
4	MM: COLD WATER GROUP
5	RCE: ESPRESSO GROUP BOILER
6	MF1: MOTOR OF MIXING BOWL GROUP N. 1
7	MF2: MOTOR OF MIXING BOWL GROUP N. 2
8	MF3: MOTOR OF MIXING BOWL GROUP N. 3
9	MLV: MOTOR OF ESPRESSO GROUP LEVERS
10	MC: MOTOR OF ESPRESSO GROUP GRINDER
11	EM: ESPRESSO GROUP ELECTRO-MAGNET
12	MP1: MOTOR OF POWDER GROUP N. 1
13	MP2L: MOTOR OF POWDER L GROUP N. 2
14	MP2R: MOTOR OF POWDER R GROUP N. 2
15	MP3: MOTOR OF POWDER GROUP N. 3
16	MZ: MOTOR OF SUGAR GROUP
17	E3: ESPRESSO GROUP 3 WAYS ELECTROVALVE
18	PME: ESPRESSO GROUP PUMP
19	RSE: ESPRESSO GROUP HEATING RESISTANCE
20	MMA: FORWARD MOVEMENT OF THE HAND
21	MMI: BACK MOVEMENT OF THE HAND
22	EA1: WATER ELECTROVALVE GROUP N. 1
23	EA2: WATER ELECTROVALVE GROUP N. 2
24	EA3: WATER ELECTROVALVE GROUP N. 3
25	EA4: WATER ELECTROVALVE FOR ESPRESSO HEATING
26	BS: WINDOW LOCK ELECTRO-MAGNET
27	BMM: HAND MOVEMENT ELECTRO-MAGNET
28	ER: WATER SUPPLY ELECTROVALVE / WATER MOTOR
29	EF: COLD WATER ELECTROVALVE
30	EP: SHOVEL ELECTROVALVE
31	MB1: CUPS GROUP MOTOR 1
32	MB2: CUPS GROUP MOTOR 2

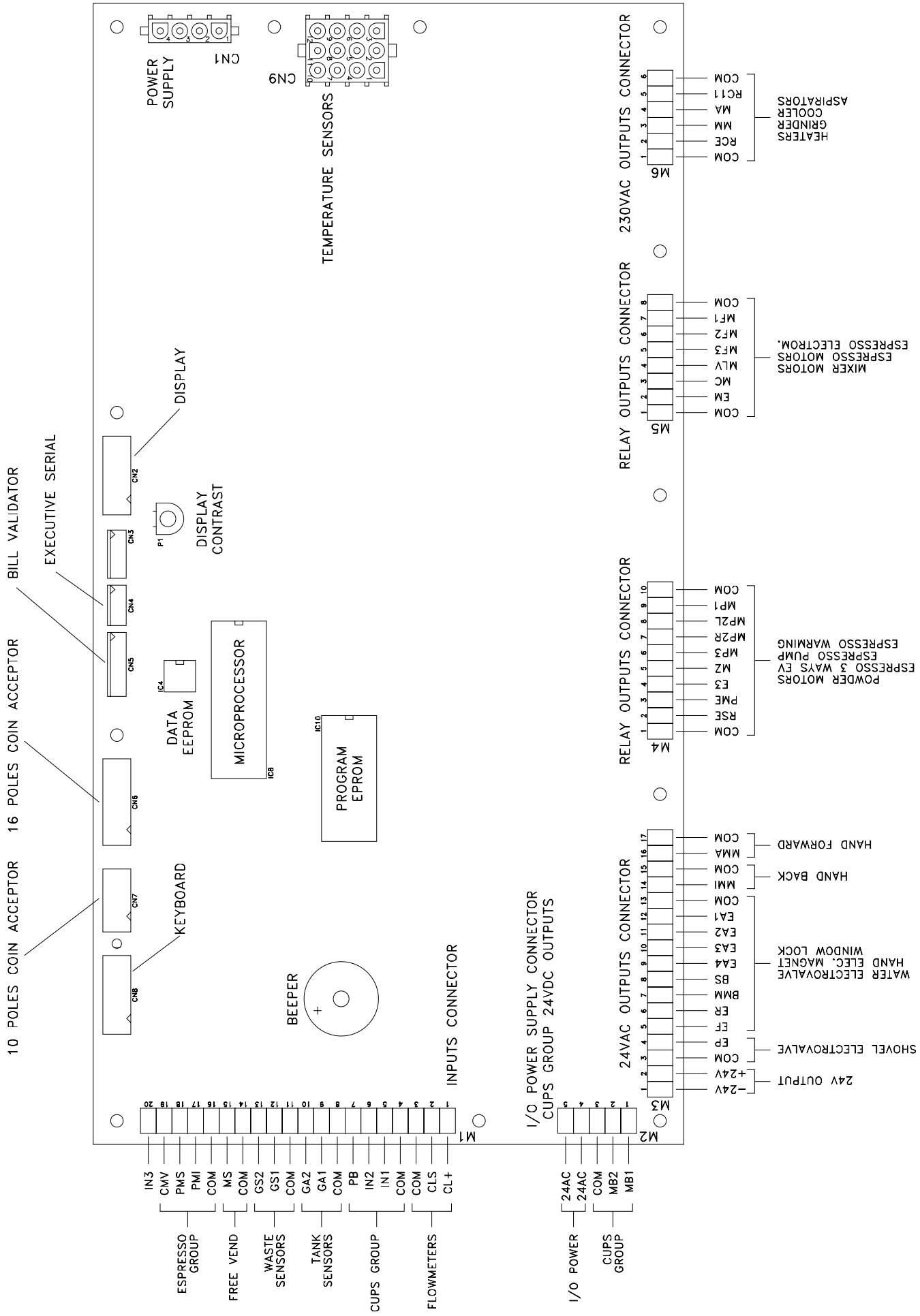
In the **“ALARM”** menu the counters are associated to single codes of alarm, to indicate anomalies or “out of service”. These counters can register up to 225 alarms of the same kind.
To set to zero these counters you have to press key “no spoon” and to confirm this by pressing key “one spoon”; on the contrary to clear and cancel you have to press key “two spoons” before confirm.
All alarms lead to an “out of service” of the machine and show on the display the concerning code; only alarms like “no more cups” or “no more coffee” are clearly specified by words on the display.
Moreover a beep alarm will make clear the seriousness of the alarm, depending on the quantity of repeated beeps. To deactivate this beep you have to press for at least 1 second one key from 1 to 6.
Here follows a table with the possible alarms and their codes:

	ALARM CODE
1	NO CUPS (LOAD THE STACKS OF THE CUPS FEEDER OR CHECK THE CUPS DISPENSER)
2	NO WATER (CHECK THE WATER TANK AND THE FILLING SYSTEM: PUMP OR LINK TO WATER SUPPLY)
3	BOILER 1 HEATING ALARM ("INSTANT" POWDERS) (CHECK THE HEATER AND THE TEMPERATURE SENSOR)
4	ESPRESSO BOILER HEATING ALARM (CHECK THE HEATER AND THE TEMPERATURE SENSOR)
5	ALARM OF REFRIGERATION IN THE CHILLED WATER TANK (CHECK THE REFRIGERATION SYSTEM AND THE TEMPERATURE SENSOR)
6	FILLING BOILER 1 ALARM ("INSTANT" POWDERS) (CHECK THE CORRECT CIRCULATION OF WATER AFTER TEST OF BOILER FOR INSTANT POWDERS)
7	FULL LIQUID WASTE DISPOSAL (EMPTY THE WASTE DISPOSAL)
8	THE WATER TANK IS REFILLED TOO MANY TIMES (CHECK IF THERE IS A LOSS OF WATER IN THE WATER TANK OR IN THE ELECTROVALVES)
9	THE FLOAT GS1 IS BROKEN (CHECK IF BOTTOM FLOAT 1 IN THE WASTE DISPOSAL IS WORKING)
10	THE FLOAT GA1 IS BROKEN (CHECK IF BOTTOM FLOAT 1 IN WATER TANK IS WORKING)
11	SOLUBLE'S BOILER IS OVERHEATED (CHECK THE HEATER AND TEMPERATURE SENSOR)
12	THE ESPRESSO BOILER IS OVERHEATED (CHECK THE HEATER, THE SENSOR AND RESET CLIXON)
13	NO SERIAL CONNECTION WITH THE EXECUTIVE PAYMENT SYSTEM (CHECK THE SERIAL CONNECTION AND THE EXECUTIVE PAYMENT SYSTEM)
14	NO COFFEE (CHECK THE COFFEE QUANTITY AND IF GRINDER WORKS)
15	THE LEVER DOESN'T REACH THE HIGHEST DEADLOCK (CHECK LEVER SYSTEM OF ESPRESSO GROUP)
16	THE LEVER DOESN'T REACH THE LOWEST DEADLOCK (CHECK LEVER SYSTEM OF ESPRESSO GROUP)
17	TIMEOUT OF THE ESPRESSO FLOWMETER (CHECK WATER CIRCULATION AND IF COFFEE BLEND IS TOO FINE)

Setting default values in the EEprom memory

The EEprom memory is already programmed with values that normally allow the machine to be immediately used; anyway it is possible to change these parameters of working according to your own needs.
If you wish to reset the machine with the pre-programmed values, you have to follow the procedures for setting up the memory. Therefore, after having switched off the machine, you have to press the service key, the key “two spoons” and the key indicating the chosen program. Then you have to switch on the machine and wait until a confirmation text appears on the display. This procedure makes you enter the test function.
Here is a table representing these procedures:





DB8B board layout and external connections